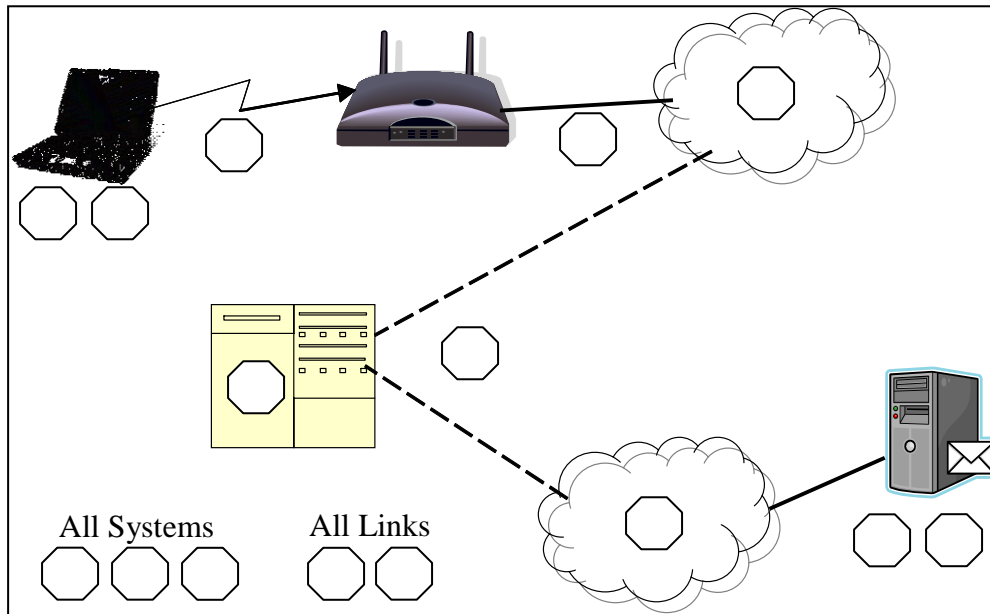


Introduction to Data Communications and Networking

1. We are going to study many topics over the coming months. How do they fit into a typical data communications encounter?



2. A communications link is advertised as 2Mbps. What does Mbps mean? How many bits will the link transmit in one second (a) 2,000,000 or (b) 2,097,152?
3. A communications link is advertised as 64kbps. What does kbps mean? How many bits will the link transmit in one second (a) 64,000 or (b) 65,536?
4. A data file is said to be 1Mbyte in length. Does it have (a) 1,048,576 bytes or (b) 1,000,000 bytes.
5. Suppose an application layer entity wants to send an L-byte message to its peer process, using an existing TCP connection. The TCP segment consists of the message plus 20 bytes of header. The segment is encapsulated into an IP packet that has an additional 20 bytes of header. The IP packet in turn goes inside an Ethernet frame that has 18 bytes of header and trailer. What percentage of the transmitted bits in the physical layer correspond to message information, if L = 100 bytes, 500 bytes, 1000 bytes?(hints: slide #41 of Lecture notes #1. Each TCP/IP layer adds header information to create new data unit before passing to lower layer.)
6. Explain in detail about each component of the communication model you learned from the previous class. (20 marks)
7. Explain the key words below:
 - Transmission System Utilization
 - Interfacing
 - Signal Generation
 - Synchronization

- Exchange Management
- Error detection and correction
- Addressing and routing
- Recovery
- Message formatting
- Security
- Network Management

Heads up for what is coming next week:--

What is the full form of **OSI** model? Why is the need to know about it? Listen to what your tutor says about this, and be focused as we will discuss this crucial concept next week.

What does the term '**bursty**' mean in terms of network traffic? What is '**traffic**' in a network?